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PORTER'S FIVE FORCES ANALYSIS OF THE DISTRICT HEAT SECTOR

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Abstract: *Continuous analysis of the corporate environment is key to executives with a strategic approach to companies. However, analysing the company's environment can not only be relevant to the individual entity but can also provide valuable information to researchers and professionals looking at the industry and the trends that can be observed there. The author's research focus is on district heat suppliers. The purpose of this study is to measure the new aspects of district heat suppliers' industry specificities with the application of Porter's five forces analysis and to gather the factors that may affect the asset, financial and income position of companies.*

Keywords: *District heat supply, District heat producers, District heat suppliers, Porter's*

1. INTRODUCTION, GOALS

Future-oriented leadership and strategic thinking are key requirements for entities to operate economically and sustainably. In order to ensure that strategy creation is appropriate, it is necessary to analyse the company's internal and external environment. Companies focus primarily on the analysis of internal environmental factors and are able to analyse them [1], as the surrounding environment is a complex and constantly changing system of relationships [2]. However, analysing the company's environment can not only be relevant to the individual entity but can also provide valuable information to researchers and professionals looking at the industry and the trends that can be observed there. The author's research focus is on district heat suppliers. Earlier research focused primarily on the political, legal, social, economic, technological and natural environments that determine the district heating industry [3]. The purpose of this study is to examine the macro-environment of heat suppliers with a new aspect of applying Porter's five forces analysis, in order to identify elements that can significantly affect the assets, financial and profitability situation of entities operating in the district heating industry. In the first part of the study introduces the literary background of Porter's five forces analysis and then focuses on the specific characteristics of the heat supply industry.

2. LITERARY BACKGROUND OF PORTER'S FIVE FORCES ANALYSIS

An excellent tool for the structured understanding of the industry environment is Porter's five-forces model [4] [5]. This model describes the factors that determine the attractiveness of an industry in the long run. According to Porter, these are:

- The degree of competition
- The threat of new entrants
- Supplier's bargaining power

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- Buyer's bargaining power
- The threat of substitute products [6]

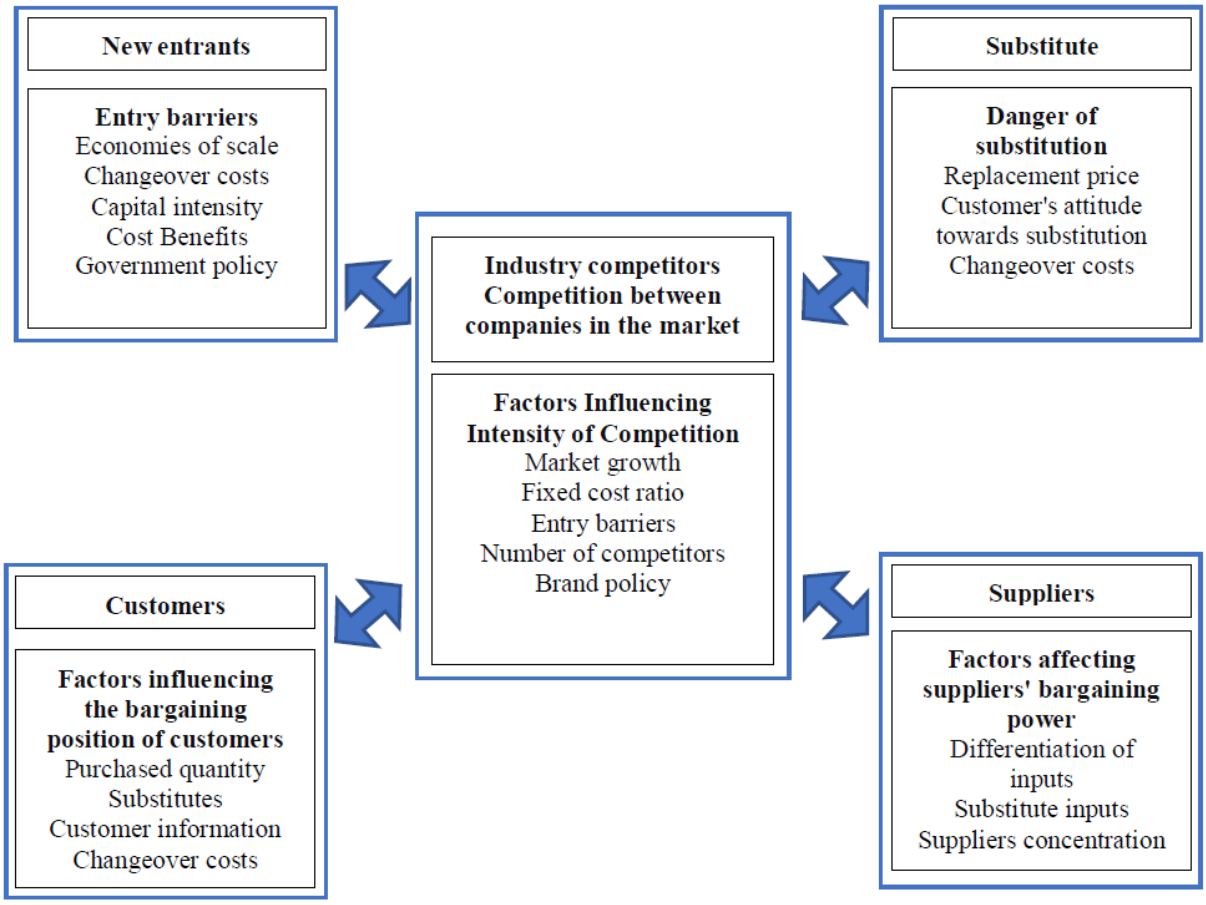

Figure 1
Porter's five forces analysis [7]

The significant recognition of Porter-'s "Five Force" model is that the general knowledge of competitors is no longer enough to develop the strategy, broadening the scope of competition and its players compared to earlier models [8].

As a central element of the competitive environment, we can identify *competition between companies in the market*. Industry competition is stronger in the following situations, among others:

- the degree of product differentiation is low,
- there are many companies of similar size on the market,
- transaction costs are low, [9]
- high entry and exit costs.
- In the case of competitors' reactions, their extent is decisive [1]

The more profitable an industry is, the more *new entrants* are interested [2], and their appearance will intensify the competition. The threat of new entrants may be compounded by the following factors:

- questions of economies of scale,
- - learning curve,

- - high entry costs,
- - strong product and brand differentiation,
- - difficult access to distribution channels [9]

The concentration of suppliers and buyers, or even fragmentation, is one of the determinants of bargaining power [2]. Companies are subject to varying degrees of demand from customers for cheaper and better products/services [3]. Recently, the relationship between buyers and suppliers has changed significantly, and we can see more and more party relationships [9].

Substitute products pose a greater risk to an enterprise when more favourable price/quality is shown [1]. Substitute products are products that meet the same customer needs, even if they come from other industries

3. PORTER'S FIVE FORCES ANALYSIS OF THE DISTRICT HEAT SUPPLY

This chapter of the paper focuses on the specific characteristics of the heat supply industry.

3.1. Suppliers' bargaining position:

Heat producers are extremely important strategic partners for district heat suppliers, whose substitutability is not solved or limited. Effective and close co-operation is key to maintain constant level of service

The operation and maintenance of district heating systems is a task requiring special expertise. With the expansion of the network, the implementation of technical construction tasks, the operation heat centres and remote monitoring systems, partners should be used whose substitutability is difficult to solve. Close cooperation is required to ensure a continuous and secure service. This is especially important when it comes to a malfunction and an urgent failure to fulfil the public service obligation of the heat supplier

3.2. Buyers' bargaining position:

The district heating supplier is subject to a general public service obligation with residential users, i.e. the owners and the owner community. 'The public service contract between the district heating service provider and the user is created by using the service under the conditions specified in the legislation and the business rules. Changes in the personality of the payers do not affect the validity of the general public service contract concluded between the user and the district heating supplier. The payer shall be entitled to use the service as of the date of the change as provided for in the general public service contract and shall be obliged to pay the charges for district heating from the same date.' [9]. When a person purchases an apartment in a building with district heating, it is considered to be a district heating user at the time of the change of owner, and at the same time there is a duty to pay. With user communities, a joint contract is concluded because the terms and conditions for the technical and other services specified in the contract are given per heat centre, heat receiver, cannot be individually regulated, and the agreement of the whole district of the heating district is required.

Non-residential users have a unique public service obligation for the heat supplier to regulate the technical, legal and financial conditions of the service. Typically, non-residential users, or a group of non-residential users, have their own controllable heat centre, so there is a unique agreement.

3.3. Product substitutability:
The substitutability of the product should be examined at two levels:

- Under what conditions would be able to meet the existing consumers' need for heat and hot water.
- What kind of alternatives to district heating will be found by the new consumers entering the market (new apartment blocks and institutions)

3.3.1. Substitution option for existing customers.
There are substitute products, electricity, gas and other alternative heating options available on the market. However, unbundling of district heating is subject to very strict legal conditions. 2005 XVIII. the Act on the provision of district heating includes, inter alia, the following conditions for disconnection from service
Section 38 (5) In the event when the district heating is intended to eliminate the use of district heat in a separate building and separate use, the owner of the building part and the user may jointly initiate the amendment of the general public service contract, as a joint condition according to the followings:
(a) All members of the community of the owner of the district-heating building agree to the termination;
b) Heat supply in the building section with the same level of comfort as the district heating system, which can be operated independently of the user's equipment to provide heating;
c) The termination does not cause significant damage to the other owners of the building and does not limit the rights of others, owners, users or tenants of the building;
(d) Bear the costs incurred by the technical conversion of the user equipment in connection with the termination of service;
e) The termination of the use of the service is permitted by the existing system and is not in conflict with other legislation. [10]
In addition, local regulations may impose additional conditions for detachment, such as air purity considerations.
Disconnection from the service is extremely difficult, the law protects the district heating supplier and the interests of other users inside the building.

3.3.2. Connecting new consumers to district heating
The legislator restricts the separation from district heating, but provisions aimed at increasing the competitiveness of district heating have also been issued. Among other things, LXVII of 2008 on making the district heating service more competitive [11]. Act No 1/1998 provided for support for the renovation of residential buildings and apartments, using district heating in order to reduce the costs of district heating. In addition, VAT on gas and other fuels is 27%, and from January 2010 onwards, the VAT on district heating has been reduced to 5%, which has made the public more able

to pay their heating costs.

In recent years, the expansion of the district heating sector is typical. From 2013, a 0.3% increase in the number of payers can be observed. Growth can be observed among retail payers, while the number of other payers is decreasing. The increase in the number of retail payers can be partly explained by the favourable VAT rate. From 2010, in order to make district heating more competitive, the state reduced the VAT rate on district heating to 5%. There has also been a positive change in the perception of district heating. Instead of obsolete, wasteful panel heating, a more modern and measurable district heating service based on modern technology is becoming more and more evident. As a result of closing system replacement, external thermal insulation, and the modernization of the heating system, the adjustment of the heating system was characterized by a decrease in consumption [12].

Table 1
Changes in the number of district heat fee payers [13]

Year	Number of total fee payers	Number of household fee payers	Number of other fee payers
2013*	675 057	654 943	20 114
2014*	675 970	656 084	19 886
2015	676 640	656 861	19 779
2016	677 077	657 276	19 801
2017	677 681	657 860	19 821

In the energy sector, consumer numbers can be considered stable, but it should be noted that in the district heating sector there was a slight increase in recent years, compared to 2016, with 1.8% fewer consumers than in the previous year [14].

Connecting new consumers to district heating is capital-intensive, and requires long-term returning investments from district heating suppliers. In order to stimulate investment and to implement the National Energy Strategy for 2030, the state will provide more than 25 billion euros to increase the energy efficiency of district heating networks, including the connection of new consumers to district heating [15].

3.4. New entrants, entry barriers:
Conceptual definition of district heating service in Act XVIII of 2005 on district heating Pursuant to Article 3 (q) of Act No 1/2004, 'the public service which supplies the user from the district heating plant through the district heating network to the district heating operator through the supply of heat and other heat for energy purposes' [10]. It is clear from the conceptual definition of district heating that the service activity can only be performed by a licensed person, i.e. the establishment of a district heating plant, and district heating. The licenses are issued by the Hungarian Energy and Public Utilities Regulatory Authority. Examining the legal framework for district heating, we can say that district heat suppliers operate as a natural monopoly on the market. The services provided by the natural monopoly of large-scale network systems

(see monopoly and natural monopoly below) are fully within the framework of economic public services based on their specific characteristics, so in almost all cases the natural monopoly structure has also been strengthened through legal regulation. The Hungarian state is in compliance with CLXXXIX. The law classifies district heating as one of the local government tasks to be performed in public tasks. The municipal public service contractor is contracted with heat suppliers to perform district heat supply tasks in the municipality. New market entrants do not threaten district heat suppliers, have a close professional partnership with other district heating companies. The Professional Association of Hungarian District Heating Suppliers (MaTaSzSz) was established in 1993. Its aim is to bring together companies engaged in district heating, and companies that are connected to the district heating sector with their activities and the products they produce or distribute. They contribute to networking and advocacy, as well as to the widespread deployment of the latest industry innovations as well as environmental and climate protection and energy efficiency solutions.

4. CONCLUSIONS, COMPETITION BETWEEN COMPANIES IN THE MARKET

From the environmental analysis of district heat suppliers it can be seen that the legal-political environment significantly determines the management of companies. As natural monopolies, the market operates with strong state regulation. The Hungarian Energy and Public Utility Regulatory Authority is responsible for the regulation, for example, the agreed sales tariffs, the unit price of the purchased heat and the amount of the district heat supply subsidy [16]. These are the three regulated items that most determine the effectiveness of companies.

District heat suppliers are typically in municipal ownership, so strategic decisions are not only driven by corporate interests, but also by higher city-level interests.

This research, as part of ongoing research, has set the goal of analysing the environment of district heat suppliers in terms of industry competition and identifying the key factors that have a decisive impact on industry companies. For analysis, Porter's five forces analysis was applied.

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